

SPOROBOLUS POTOSIENSIS (POACEAE:
ERAGROSTEAE): A NEW RHIZOMATOUS
SPECIES FROM SAN LUIS POTOSÍ, MÉXICO,
AND A NEW COMBINATION IN *S. AIROIDES*

JOSEPH K. WIPFF and STANLEY D. JONES

S.M. Tracy Herbarium
Department of Rangeland Ecology and Management
Texas A&M University
College Station, TX 77843-2126, U.S.A.

ABSTRACT

Sporobolus potosiensis is a new rhizomatous species from San Luis Potosí, México that differs from its closest putative relative, *S. airoides*, by 1.) having conspicuous and slender rhizomes, 2.) lacking trichomes behind the ligule, and 3.) generally smaller in stature. A new combination is proposed at the subspecific rank: *S. airoides* subsp. *regis*. A key to the rhizomatous species of Mexican *Sporobolus*, as well as *S. nealleyi* and *S. airoides*, is provided.

RESUMEN

Sporobolus potosiensis es una nueva especie rizomatosa de San Luis Potosí, México, que difiere de su pariente putativo más próximo *S. airoides* por 1.) tener rizomas conspicuos y más delgados, 2.) ausencia de tricomas detrás de la lígula, y 3.) tamaño más pequeño generalmente. Se propone una nueva combinación de rango subespecífico: *S. airoides* subsp. *regis*. Se ofrece una clave para las especies rizomatosas mexicanas de *Sporobolus*, así como para *S. nealleyi* y *S. airoides*.

Sporobolus is a genus of approximately 160 species, distributed throughout the tropics, subtropics and temperate areas (Clayton and Renvoize 1986). The species of *Sporobolus* intergrade to such an extent that their limits are seldom sharply defined (Clayton and Renvoize 1986). There are approximately 60 species of *Sporobolus* known to occur in the New World (Judziewicz and Peterson 1989) and 28 species are reported from México (Beetle 1987), only two species of which have been reported as rhizomatous: *S. virginicus* (L.) Kunth and *S. regis* I.M. Johnston. *Sporobolus virginicus*, a strongly rhizomatous perennial, is found on sandy beaches and at the bases of sand dunes from Virginia to Texas, south to Brazil and Peru, the West Indies, and the tropics of the Old World (Reeder 1975; Pohl 1980).

Sporobolus regis is only known from Coahuila, México (Beetle 1987). Johnston (1943) stated that his new species, *S. regis*, was probably most closely related to *S. airoides* (Torr.) Torr. and *S. wrightii* Munro ex Lamson-Scribner and differed from these species in having pubescent leaf sheaths, tufts of trichomes in the axils of the panicle branches, and very coarse

rhizomes. Johnston (1943) also mentioned that "the bases of the culms and the younger nodes of the rhizomes bear shredded remnants of old leaves." The presence of shredded remnants of old leaves on the rhizomes needed further investigation, since grass rhizomes usually produce modified leaves termed "scale leaves" (Gould and Shaw 1983). Examination of the holotype [*Stewart 2653* (GH, acronyms according to Holmgren et al. 1990)], revealed that *S. regis* is not rhizomatous and that the "rhizomes" are the portion of the culms covered by soil, with their sheaths decomposed and their nodes developing adventitious roots, thus resembling rhizomes. All of the tillers, or shoots, of the type specimen are erect and lack lateral (horizontal) shoots. Because of the obvious remnants of the culm sheaths, and the lack of "scale leaves" on the culms, there is little doubt that the "rhizomes" of *S. regis* are in fact culms responding to being buried.

Sporobolus regis is distinguished from *S. airoides* by its densely pubescent sheaths and tuft of trichomes in the axils of the panicle branches. In our opinion, these characters are not significant to warrant the recognition of *S. regis* at the specific rank, but are significant to warrant infraspecific recognition. The lack of rhizomes places this taxon in *S. airoides*. However, these unique and distinct characters coupled with its restricted distribution (SW Coahuila) justify the recognition of this taxon at the subspecific rank, thus necessitating the following new combination.

***Sporobolus airoides* (Torr.) Torr. subsp. *regis* (I.M. Johnst.) Wipff & S.D. Jones, comb. et stat. nov. BASIONYM: *Sporobolus regis* I.M. Johnst., J. Arnold Arbor. 24: 393–394 (1943). TYPE: MÉXICO. COAHUILA: salt flat 4 km SE of Laguna del Rey, abundant, 18 Sep 1942, *Stewart 2653* (HOLOTYPE: GH!).**

Sporobolus potosiensis Wipff & S.D. Jones is the second rhizomatous species known to occur in México. This new species was originally identified at TAES from specimens that were either unidentified or misidentified as *S. nealleyi* Vasey. Specimens were requested from MEXU, MICH, MO, TEX and US to determine whether additional collections could be found.

Sporobolus nealleyi is a caespitose, non-rhizomatous, gypsophilous species of the southwestern United States and northern México. Chase (1951) and Correll and Johnston (1970) reported *S. nealleyi* as rhizomatous or subrhizomatous. None of the specimens examined, including the holotype (*Nealley, US*), had rhizomes. However, the densely tufted and persistent bases can be covered by soil and then appear to be shortly rhizomatous or subrhizomatous, as already discussed above. *Sporobolus nealleyi*, in México, is reported from Coahuila, Nuevo León, and San Luis Potosí (Reeder 1975; Beetle 1987). It appears that reports from San Luis Potosí are based on misidentified collections of *S. potosiensis*. Based upon specimens examined, the distribution of *S. nealleyi* in México is probably restricted to northern Coahuila and Nuevo León.

The closest putative relative of *S. potosiensis* is *S. airoides*. Specimens of *S. potosiensis* superficially resemble depauperate individuals of *S. airoides*, but differ from *S. airoides* by 1.) having conspicuous and slender rhizomes, 2.) lacking trichomes behind the ligule, and 3.) being smaller in stature. *Sporobolus airoides* does not have rhizomes and usually has conspicuous trichomes behind the ligule, though some very depauperate specimens were examined that did not have trichomes. *Sporobolus airoides* is usually a robust plant to 150 cm tall, but depauperate specimens may resemble *S. potosiensis* in general appearance, except for the conspicuous rhizomes.

KEY TO THE RHIZOMATOUS SPECIES OF *SPOROBOLUS* IN MÉXICO,
AS WELL AS *S. AIROIDES* AND *S. NEALLEYI*

- 1. Plants without rhizomes 2
- 1. Plants with rhizomes 4
 - 2. Inflorescences (5-) 15–25 cm wide; found on dry soils in open ground, prairies and along saline or alkaline flats 3
 - 2. Inflorescences 1–3.5 cm wide; restricted to gypsiferous soils *S. nealleyi* Vasey
 - 3. Back of sheaths densely pubescent; base of inflorescence primary branches adaxially pubescent *S. airoides* subsp. *regis* (I.M. Johnst.) Wipff & S.D. Jones
 - 3. Back of sheaths glabrous; base of inflorescence primary branches glabrous *S. airoides* subsp. *airoides*
 - 4. Inflorescences 4.0–9 cm wide, 12–18 cm long, open; branches spreading; plants inland, not coastal *S. potosiensis* Wipff & Jones
 - 4. Inflorescences 0.6–1.0 cm wide, 2–8 cm long, contracted; branches appressed; plants coastal *S. virginicus* (L.) Kunth

***Sporobolus potosiensis* Wipff & S.D. Jones, sp. nov. (Figs. 1–4)**

Gramen perenne, 18–51 cm altum; rhizomatibus ad 14.5 cm longis, 1.3–3.5 mm latis. Inflorescentia 12–18 cm longa, ad 9 cm lata, diffusa; spiculis 1.6–2.5 mm longis, glabris; antheris 3, 1.2–1.4 mm longis, luteolis.

Plants (Fig. 1) perennial, erect, 18–51 cm tall with slender *rhizomes* (Fig. 2) to 14.5 cm long, 1.3–3.5 mm wide. *Leaves* 4–5, cauline, subcoriaceous; *sheaths* glabrous, margins ciliate; *collar* (Fig. 4) abaxially glabrous, yellowish, margins conspicuously long ciliate with trichomes to 5.5 mm long; *blades* 6.2–24.0 cm long, 0.6–2.5 mm wide, flat, folded or involute; abaxial surface glabrous; adaxial surface minutely papillose, antrorsely scaberulous along raised veins; margins antrorsely scaberulous; *ligules* 0.1–0.3 mm long, ciliolate membrane, truncate, lacking long trichomes behind the ligule. *Inflorescences* an open panicle, 12–18 cm long, 4.0–9.0 cm wide, glabrous; lower branches 3.0–8.0 cm long, nonfloriferous in the proximal 1/3–1/2; pedicels 0.2–2.2 mm long, glabrous; spikelets appressed to tertiary branches. *Spikelets* (Fig. 3) 1.6–2.5 mm long, 0.5–1.1 mm wide, glabrous, mottled purplish, with one floret; *glumes* unequal; *first glumes* 1.0–1.5 mm long,

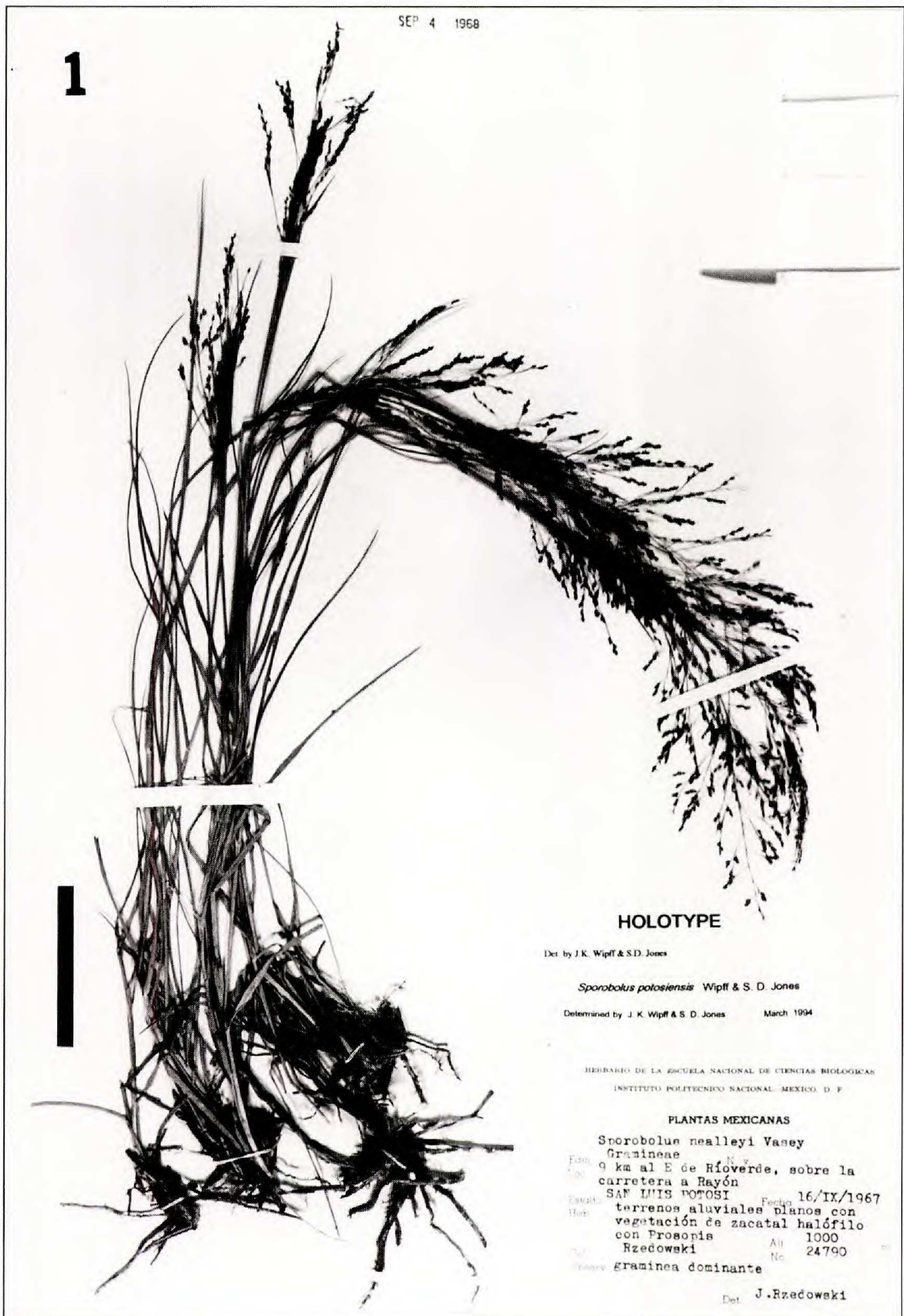


FIG. 1. Photograph of *Sporobolus potosiensis* [Rzedowski 24790 (MICH)]. Bar = 5 cm.



FIG. 2. Photograph of the rhizomes of *Sporobolus potosiensis* [Bravo 14 (MEXU)]. Bar = 1 cm.

veinless, lanceolate; *second glumes* 1.3–2.1 mm long; conspicuously 1-veined, vein green; lanceolate with white-hyaline margins in the distal half, slightly shorter than lemma; *lemmas* 1.5–2.3 mm long; conspicuously 1-veined, vein green, ovate-lanceolate, mottled purplish with white-hyaline margins in distal half; *paleas* 1.6–2.2 mm long, 2-veined, grooved or furrowed between veins, similar to lemma texture and color; *anthers* 3, 1.2–1.4 mm long, yellowish. *Caryopses* 0.9–1.0 mm long, 0.4–0.5 mm wide. *Chromosome number* unknown.

The specific epithet refers to the State of San Luis Potosí, México; the only area in which this species is currently known to occur.

Distribution: Known only from the Río Verde River Valley, San Luis Potosí, México.

TYPUS: MÉXICO. SAN LUIS POTOSI: 9 km al E de Río Verde, sobre la carretera a Rayón, alt. 1000 m, terrenos aluviales planos con vegetación de zacatal halófilo con *Prosopis*, gramínea dominante, 16 Sept 1967, *J. Rzedowski* 24790 (HOLOTYPE: MICH!; ISOTYPES: LL!, MICH!, TAES!, WIS).

Additional specimens examined (paratypes): MÉXICO. **San Luis Potosi:** in the valley of the Río Verde, between Río Verde and San Ciro, alt. 850–1000 m, 12 Sep 1954, *Sobns* 1228 (TAES); in the valley of the Río Verde and in the Sierra de Cuates along the route, Río Verde-San Francisco-Patios-Cardenas-Rayón, 14–15 Sept 1954, *Sobns* 1254 (TAES); Mpio. Ciudad del Maiz, 0.7 mi N of Las Tablas (RR crossing in town), alkaline flats dominated by grass and *Juncus*, gypseous soil, scattered mesquite, endemic *Hedyotis*, *Pinaroppapus*, *Chenopodium*, *Samolus*, *Viguiera*, *Flaveria*, alt. 1010 m, 22°17'N, 99°52'W, 14 Sep 1988, *Nesom* 6680 & *Wells* (ARIZ, TEX); ± 5 km al SW de Tablas, alt. 1000 m, 22 Jan 1959, *Rzedowski* 9613



FIG. 3. Scanning electron micrograph of the spikelet of *Sporobolus potosiensis* [Rzedowski 24790 (TAES)]. Bar = 0.5 mm.

FIG. 4. Scanning electron micrograph of the collar of *Sporobolus potosiensis* [Rzedowski 24790 (TAES)]. Bar = 0.5 mm.

(MEXU); Región de Llanos de Angostura municipio de Río Verde, alt. 900 m, 29 Jul 1980, *Bravo 14* (MEXU); 0.65 km (0.4 mi) N of the Escuela Primera in Las Tablas, on gravel road running between Hwys 70 and 80, alt. 1097 m (3600 ft), 27 Jul 1979, *Lane 25386 & J. E. Fryxell* (TEX).

ACKNOWLEDGMENTS

We thank Tony A. Reznicek (MICH) for his assistance with the Latin description and review of the manuscript. We thank Charlotte G. and John R. Reeder (ARIZ), and an anonymous reviewer for their review and suggestions. We also would like to thank the Curators at the following herbaria for loaning specimens: GH, MEXU, MICH, MO, TEX/LL, and US.

REFERENCES

- BEETLE, A.A. 1987. Noteworthy grasses from Mexico XIII. *Phytologia* 63:209–297.
- CHASE, A. 1951. A revision of A. S. Hitchcock's Manual of the grasses of the United States, 2nd ed. U.S.D.A. Misc. Publ. No. 200. United States Government Printing Office, Washington, D.C.
- CLAYTON, W.D. and S.A. RENVOIZE. 1986. Genera graminum, grasses of the World. Kew Bull., Addit. Ser. XIII. Her Majesty's Stationery Office, London.
- CORRELL, D.S. and M.C. JOHNSTON. 1970. Manual of the vascular plants of Texas. Texas Research Foundation, Renner, TX.

- GOULD, F.W. and R.B. SHAW. 1983. Grass systematics, 2nd ed. Texas A&M University Press, College Station, TX.
- HOLMGREN, P.K., N.H. HOLMGREN and L. C. BARNETT. 1990. Index herbariorum. Part I: The herbaria of the world. *Regnum Veg.* 120. New York Botanical Garden, New York, NY.
- JOHNSTON, I.M. 1943. Plants of Coahuila, eastern Chihuahua, and adjoining Zacatecas and Durango, II. *J. Arnold Arbor.* 24:377–421.
- JUDZIEWICZ, E.J. and P.M. PETERSON. 1989. *Sporobolus temomairemensis* (Poaceae: Eragrostidae): a new species from northern South America. *Syst. Bot.* 14:525–528.
- POHL, R.W. 1980. Gramineae. In: *Flora Costaricensis*, Family #15, ed. W. Burger. Fieldiana, Botany No. 4. Field Museum of Natural History, Chicago, IL.
- REEDER, C.G. 1975. *Sporobolus*. In: *The grasses of Texas*, Frank W. Gould. Texas A&M University Press, College Station, TX.